

IMPACT OF DRIP IRRIGATION SYSTEM AMONG ONION GROWERS IN COIMBATORE

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ABSTRACT

Water is required for diverse purposes viz., agriculture, industry, domestic use, energy sector etc. In India, only the Agriculture sector accounts for over 85 per cent of total water uses (Katar Singh 2007). As the ground water level is depleted day by day and Onion can be grown throughout the year, “Scientific Workers Conference” has stressed the importance of cultivating Onion under Drip irrigation system and encourages to under-take research activities on “Role of Drip Irrigation in Onion Cultivation”. In line with the above context, the present study has been formulated. The present study focuses on the “Impact of Drip Irrigation System among the Onion Growers in Coimbatore”. The data were collected from 119 respondents of five villages using a well-structured interview schedule. Aspect wise impact after the adoption of drip irrigation system among the Onion growers was also studied viz., change in self-sufficiency, conserved water usage, save in fertilizer and plant protection and weed control usage, save in labour utilization and increase in crop production and quality produce. The study revealed that more than three-fourths (77.30%) of the respondents had a medium level of impact and most of the respondents had positivity towards conserved water usage, save in fertilizer, plant protection chemicals, suppressed weed growth, increased production and quality produce

KEYWORDS: Impact, Drip Irrigation System, Water Usage, Adoption & Onion

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INTRODUCTION

Onion (*Allium cepa* L.) is an important and indispensable item in every kitchen as condiment and vegetable. China ranks first in Onion production in the world, while India ranks second. Onion consumption and usage is spread throughout the year and there is a continuous demand for Onion shallots all around the year throughout the world. However, the production of Onion fluctuates from year to year. The low production results in a hike of the price which creates dis-comfort among consumers and farmers. Drip irrigation is a localized irrigation method that slowly and frequently provides water directly to the plant root zone. This modern technology of irrigation (drip irrigation) was invented in Israel by Simchar Blass and Yeshayahu. Drip irrigation was introduced in India in 1987 but its programme started in 1997 to address the irrigation problem of small and marginal farm families living in water-scarce regions. The system has become popular in India and India ranks 7th in terms of coverage of area under drip irrigation system with an area of 3,09,466 hectares after the USA, Spain, Australia, South Africa, Israel and Italy (Bunker *et al.*, 2012). It saves 60.00 per cent to 70.00 per cent water as compared to surface irrigation method and has Water Use Efficiency (WUE) of about 80.00 per cent to 90.00 per cent (Bunker *et al.*, 2013). As the ground water level is depleted day by day and Onion can be grown throughout the year, “Scientific Workers

Conference” has stressed the importance of cultivating Onion under drip irrigation system and encourages to under-take research activities on “Role of Drip Irrigation in Onion Cultivation”. In line with the above context, the present study has been formulated. The present study focuses on the “Impact of Drip Irrigation System among the Onion Growers in Coimbatore”.

METHODOLOGY

The study was conducted in the Thondamuthur block of Coimbatore district, Tamil Nadu. Coimbatore ranks first in the productivity of small Onion in Tamil Nadu. Horticultural crops are predominantly grown in the Thondamuthur block, among which small Onion tops the table with high productivity. The study was conducted in five villages of the block, with maximum production viz., Devarayapuram, Ikkarai Boluvampatti, Narasipuram, Vellimalaipattinam and Pooluvampatti. The *ex-post facto* research design was used in the study. A sample size of 119 was selected as total, from two per cent of the Onion farmers using the drip irrigation system in that specified block by using Proportionate Random Sampling method. The statistical tools used in the study were percentage analysis and cumulative frequency method.

Impact of Drip Irrigation System among Onion Growers

The data on the overall impact of the drip irrigation system among Onion growers were collected and analyzed by using cumulative frequency method and percentage analysis are presented in Table 1.

Table 1: Distribution of Respondents according to their Overall Impact of Drip Irrigation System among Onion Growers (n=119)

| S. No | Category | Number | Per cent |
|--------------|----------|------------|---------------|
| 1 | Low | 13 | 10.90 |
| 2 | Medium | 92 | 77.30 |
| 3 | High | 14 | 11.80 |
| Total | | 119 | 100.00 |

From Table 1 it is clear that more than three-fourths (77.30%) of the respondents had medium level impact of drip irrigation system followed by 11.80 per cent of the respondents had a high level impact of drip irrigation system while a meager of 10.90 per cent of the respondents had a low-level impact of drip irrigation system.

It could be concluded from the above result that more than three-fourths (77.30%) of the respondents had a medium level impact of drip irrigation system. The possible reason could be that the respondents might be very much satisfied with the output received due to the usage of drip irrigation system. They might have felt the importance of drip irrigation system in the context of water and labour scarcity. It could also be due to the reason that, the respondents had a medium effect of drip irrigation system on production, medium maintenance of the system and medium satisfaction with drip irrigation system.

The above findings are on par with the findings of Shantaram (2014).

Aspect Wise Impact after the Adoption of Drip Irrigation System among the Onion Growers

Aspect wise impact of drip irrigation system among Onion growers were also studied in order to obtain a clear and detailed understanding of the findings. They were studied under four aspects viz., change in self-sufficiency, conserved water

usage, save in fertilizer, plant protection and weed control usage, save in labour utilization, increase in crop production and quality produce after the adoption of drip irrigation system. The data collected on aspect wise impact after the adoption of drip irrigation system among the Onion growers were analyzed by using percentage analysis and are presented in Table 2.

Table 2: Aspect Wise Distribution of Respondents according to their Impact after the Adoption of Drip Irrigation System

(n=119)*

| S. No | Category | | Number | Per cent |
|-------|---|--|--------|----------|
| 1 | Change in Self-Sufficiency | | | |
| | a | Needs are fulfilled | 101 | 84.90 |
| | b | Need was not raised to borrow money | 54 | 45.40 |
| | c | Sufficient money is available to feed the family | 67 | 56.30 |
| | d | High standard of life can be maintained | 11 | 9.20 |
| 2 | Conserved Water usage | | | |
| | a | An additional area has been irrigated | 50 | 42.01 |
| | b | Water usage was decreased | 115 | 96.64 |
| 3 | Save in Fertilizer, Plant Protection and Weed Control usage | | | |
| | a | Fertilizer application was reduced | 27 | 22.69 |
| | b | Reduced usage of plant protection chemicals | 26 | 21.85 |
| | c | Suppressed weed growth | 119 | 100.00 |
| | d | Decreased application of weed control chemicals | 118 | 99.16 |
| 4 | Save in Labour Utilization | | | |
| | a | Reduced labour usage in inter cultivation practices | 102 | 85.71 |
| | b | Reduced labour usage in fertilizer application practices | 119 | 100 |
| | c | Reduced labour usage in weed control practices | 109 | 91.60 |
| | d | Reduced labour usage in irrigation operations | 106 | 89.08 |
| | e | Reduced labour usage in plant protection practices | 115 | 96.64 |
| 5 | Increase in Crop Production and Quality Produce | | | |
| | a | Crop production was increased | 97 | 81.50 |
| | b | Quality produce were obtained | 111 | 93.30 |

*Multiple responses

Change in Self-Sufficiency after the Adoption of Drip Irrigation System

It is inferred from Table 2 that majority (84.90%) of the respondents were able to fulfil their needs followed by 56.30 per cent of the respondents had sufficient money to feed their family and 45.40 per cent of the respondents felt that there was no need to borrow money. Also, less than one-tenth (9.20%) of the respondents were able to maintain a high standard of life.

This might be due to the probable reason that the farmers had a medium level of economic motivation. It could also be due to the reason that majority of the farmers still considered farming as a livelihood occupation and did not consider it as a profit-making avenue.

Conserved Water usage after the Adoption of Drip Irrigation System

Table 2 revealed that majority (96.60%) of the respondents felt that water usage has been decreased after adopting drip irrigation system followed by 42.00 per cent of the respondents had positivity towards an increase in the area after the adoption of drip irrigation system.

This may be due to the case that, the whole area was brought under drip irrigation system in the initial stage itself. As the irrigation water is carried through a concealed tube and as it is multi-functional the water usage could be tremendously saved.

Save in Fertilizer, Plant Protection and Weed Control usage after the Adoption of Drip Irrigation system

From Table 2 it is acknowledged that cent per cent (100.00%) of the respondents felt that weed growth was suppressed after using the drip irrigation system, followed by 99.16 per cent of the respondents felt that the application of weed control chemicals has also been reduced after using the drip irrigation system.

This is due to the rationale that as the water is been released only at certain nozzles in the drip-tube, water cannot be spilt from other places of the drip tube. As the weeds are controlled, the usage of chemicals to control the weeds has also been reduced, which in turn reduces the cost of Onion cultivation.

Save in Labour Utilization after the Adoption of Drip Irrigation System

It is identified from Table 2 that cent per cent (100.00%) of the respondents felt that labour usage was reduced in fertilizer application followed by 96.64 per cent of the respondents felt reduced labour usage in plant protection chemicals and 91.60 per cent of the respondents perceived that labour usage reduced in weed control practices

This might be due to the fact that in surface irrigation, several labours have to be engaged for irrigation activities but under drip irrigation system only one labour is sufficient to operate the motor for irrigation purpose, Also the tillage activities were also reduced by using the drip irrigation system, which generally requires more labour.

Increase in Crop Production after the Adoption of Drip Irrigation System

It is understood from Table 2 that a vast majority (93.30%) perceived that quality produce was obtained followed by 81.50 per cent of the respondents felt crop production has been increased after using the drip irrigation system.

The reason for the above trend might be that usage of drip irrigation system will enhance the water and input use efficiency, which in turn improves the quality and quantity of produce and also reduces the weed growth, pest and disease problem.

SUMMARY AND CONCLUSIONS

It was found in the present that more than three-fourths (77.30%) of the respondents had a medium impact of drip irrigation system. It was identified most of the respondents felt positivity towards conserved water usage, suppressed growth of weeds, reduced usage of fertilizer, plant protection chemicals and weedicide, increased crop production, improved quality and reduced labour utilization. From the findings of this study, it could be suggested that extension agents working under transfer of technology in State Department, local and government agencies need to provide farmers with the required training to upgrade the Onion farmer's impact on the drip irrigation system. Farmers should be provided with remedies for the problems in using the drip irrigation system to increase their positivity towards drip irrigation system and acquire a positive impact.

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